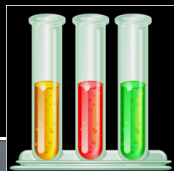


# Chemistry : Chemical Processes



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- What is Chemistry and Matter?

① Chemistry is the study of matter, its properties and its changes or transformations. *explain.*

Matter is anything that has mass and takes up space.

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## WHMIS

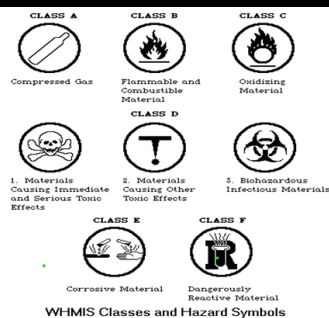
- Workplace Hazardous Materials Information System

- Why is it important?

① Reactive.  
or respond to an accident  
② Information  
③ Prevention

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## WHMIS Symbols



WHMIS Classes and Hazard Symbols

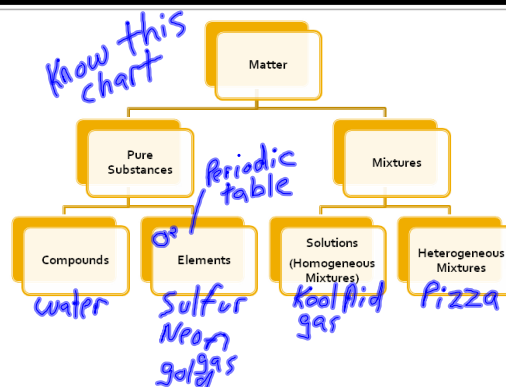
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## Hazardous Household Product Symbols (HHPS)

- HHPS is used for products at home. *WHMIS HHPS.*
- WHMIS is used in the workplace.
- MSDS – Materials Safety Data Sheet  
- describes the hazards that are associated with the chemical ( protective clothing, how to handle the chemical, how to clean up a spill).


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## Classification of Matter




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## Pure Substances

- How do we know that a sample of matter is a pure substance? 
- A **pure substance** is made up of all the same particles. *Smooth*
- A pure substance also has constant properties. Example: pure water, aluminum foil.
- Pure substances can be either elements or compounds.

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## Elements

- Elements are pure substances that cannot be broken down into simpler substances. 
- Elements contain only one kind of atom.
- Example: Oxygen, hydrogen, iron, etc. (anything on the periodic table)

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## What do you notice?

- What about:



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## Compounds

- Compounds are pure substances that contain two or more different elements in a fixed proportion.
- Example: Water  $H_2O$  = *2 parts hydrogen to 1 part oxygen.*  
Salt  $NaCl$  = *1 sodium to 1 chlorine*

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## Mixtures

- A mixture is a substance made by combining two or more different materials in such a way that no chemical reaction occurs.

*No heat or light  
color change, bubbles, smell  
fumes*

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## Homogenous Mixture (Solution)

- Mixture where the two different substances that are combined together are mixed very well.
- Any portion of the sample has the same properties and composition.

- Example: Salt Water  
Milk



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## Heterogeneous Mixture

- Mixture where the different parts or each substance can be separated physically.
- Different parts are visible.
- Example: Toppings on a Pizza  
Chocolate chip cookies  
Salad



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- 1 • Salt *mix, ho*
- 2 • Sugar
- 3 • Wood
- 4 • Rock
- 5 • Water
- 6 • Milk
- 7 • Plastic
- 8 • Glass
- 9 • Mercury

- 10 • Apple Juice
- 11 • Syrup
- 12 • Gold
- 13 • Air
- 14 • Oxygen
- 15 • Silver
- 16 • Cookies
- 17 • Cake *No frosting*
- 18 • Sand

*Home work*

Classify the following as:

a) pure or mixture

b) element, compound, heterogeneous or homogeneous mixture

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## Properties of Matter: Physical and Chemical

- A **Physical Property** is a characteristic of a substance.
- Changing the size or amount of the substance does not change the physical properties.

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## Physical Properties

- **Color** – red, green, white, etc.
- **Texture** – smooth, fine, coarse.
- **Taste** – sour, sweet, salty.
- **Odour** – what smell does the substance have?
- **States of matter** at room temperature:
  - solid, liquid, gas.

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- **Malleable** is the ability of a solid to be hammered or bent into different shapes. Aluminum foil is malleable. Gold is malleable since it can be hammered into thin sheets.
- **Hardness** – the measure of the resistance of a solid to being scratched or dented
- **Luster** – How shiny is the substance?

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## List the Physical Properties

Baking soda is:

- solid at room temperature
- white in color
- crystal form
- dissolves easily in water.



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## Chemical Properties

- A chemical property is a behaviour that occurs when a substance changes to a new substance.

↳ something new is made

- For example:

Is the substance **combustible**?

burn

Does the substance have a **reaction with acid**?

Does the substance **react with water**?

↳ dissolve

bubbles

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## Physical Changes

- Do not change the organization of subatomic particles of the sample of matter.

- Can be undone quite easily.

**Key: No new substance is created.**

- Examples: melting ice, freezing water, dissolving salt into water, breaking a stick.

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## Chemical Changes

- Change the organization of subatomic particles of the sample of matter.

- Not easily undone – almost impossible

**Key: New substance almost always formed.**

- Examples: burning wood, baking a cake, digesting food

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## Clues that a chemical change has occurred

- 1 • A new color appears.
- 2 • Heat or light is given off.
- 3 • Bubbles of gas are formed.
- 4 • A solid material (called a precipitate) forms in a liquid.
- 5 • The change is difficult to reverse.

Test?

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